

REMARKS

Claims 21-27 are pending in the present application. Claims 5-7 were rejected under 35 U.S.C. § 112, second paragraph, as described on page 3 of the Office action. Claims 1 and 5 were rejected under 35 U.S.C. § 102(e), as described on pages 3 and 4 of the Office action. Claims 1, 2, and 4-7 were rejected under 35 U.S.C. § 103, as described on page 5-7 of the Office action. Claim 3 was rejected under 35 U.S.C. § 103, as described on page 7 and 8 of the Office action. Claim 21 is the only independent claim.

The specification has been amended to address minor typographical and grammatical inconsistencies. A clean version and marked-up version of the specification, showing the amendments, are attached hereto. No new matter has been added.

It is respectfully submitted that the outstanding rejections are moot, as claims 1-7 have been canceled. Newly added independent claim 21 generally corresponds to original claim 1, but has been drafted to more clearly define and broaden the scope of the invention.

As illustrated in FIGs. 3A-3E, and as described in the specification as filed, for example on page 9, a plurality of substances can be loaded into specifically targeted and spatially varied cells. The present invention enables such a feature as a result of the chamber that accepts the fluid, and the conducting portion. Specifically, the chamber is disposed such that when the fluid is in the chamber, the fluid is in contact with the cells. Further, the conducting portion is disposed to receive a layer of the cells and is operable to pass spatially variant voltages to targeted cells for electroporation. Once the targeted cells have been electroporated, the chamber may be emptied and then refilled with a new fluid. This feature is recited in independent claim 21.

Newly added independent claim 21 recites, *inter alia*, a fluid chamber operable to receive a fluid, a stimulator array and a **conducting portion having a first side and a second side “disposed to receive a layer of the plurality of objects.”** The claim further cites that:

wherein said conducting portion is disposed such that said second side is disposed between said first side and the fluid when the fluid is received in said fluid chamber, and

wherein, when the second side has the layer of the plurality of objects thereon, when the fluid is in said fluid chamber and when the voltage source provides voltage to said stimulator array, said stimulator array is operable to generate spatially variant voltages to said conducting portion to enable the substance to pass through membranes of a spatially variant portion of the plurality of objects via electroporation.

It is respectfully submitted that claims 21-27 are patentable over the prior art of record for the following reasons.

Hoff fails to disclose the above-identified limitations.

Original claim 1 recited a “conducting microwire electrode material connected the [sic] stimulator array and to the cultured cells to cause electroporation.” Page 3 of the Office action fails to address connection to the cells. Instead, the Office action merely indicates that the device disclosed in Hoff comprises “a conducting microwire material (Figure 1:16) connected to electrodes (Figure 1:14 and Figure 1:15).”

It is submitted that the Office action fails to address the “connection to the cells” limitation of original claim 1 because Hoff fails to disclose the limitation. On the contrary, as specifically disclosed in Hoff, the electrodes 14 and 15 are in direct contact with the target tissue, whereas the cited micro wires 16 do not contact the target tissue.

Though broader than original claim 1, newly added independent claim 21 is novel over Hoff for similar reasons. Newly added independent claim 21, as discussed above, recites a conducting portion having a second side “being disposed to receive a layer of the plurality of objects.”

Hoff fails to disclose a conducting portion having a second side being disposed to receive a layer of a plurality of objects that are to have a substance disposed therein through electroporation. Accordingly, Hoff additionally fails to disclose that when the second side of the conducting portion has a layer of the plurality of objects thereon, the stimulator array is operable to generate spatially variant voltages to the conducting portion to enable the substance to pass through membranes of a spatially variant portion of the plurality of objects via electroporation.

In light of the above, it is clear that Hoff fails to disclose a conducting portion, as recited in independent claim 21. Accordingly, Hoff fails to anticipate independent claim 21 within the meaning of 35 U.S.C. § 102(e).

Claims 22-27 are dependent upon claim 21, and therefore include all the limitations thereof. For this reason, Hoff additionally fails to anticipate claims 22-27 within the meaning of 35 U.S.C. § 102(e).

As discussed on page 5 of the Office action, Nicolelis is relied upon for disclosing "a high-density multichannel microwire electrode array for measuring cell response to electrical signals."

As discussed on page 6 of the Office action, Dzekunov is relied upon for disclosing:

"An electroporation device that comprises a fluid flow chamber through which cell samples are allowed to move. The chamber comprises electrodes that apply voltages sufficient to porate the cells as they flow through the chamber. The chamber includes inflow and outflow ports, valves, tubing, and a pump. This is described in Figure 12 and paragraphs [0191]-[0193] and [0240]-[0242].

As discussed on pages 7 and 8 of the Office action, Merritt is relied upon for disclosing a high aspect ratio microelectrode array useful in the delivery and detection of electrical signals at discrete, spatially resolved locations. The Office action further indicates that paragraph [0037] of Merritt "indicates that it is known in the art to utilize indium bumps to make electrical connections between two arrays of electrical contacts."

Irrespective of the alleged disclosures in Nicolelis, Dzekunov and Merritt that are relied upon to reject the original claims, none of Nicolelis, Dzekunov and Merritt discloses the shortcomings of Hoff such that a combination of Hoff, Nicolelis, Dzekunov and Merritt would render original claim 1 or newly added independent claim 21 obvious within the meaning of 35 U.S.C. § 103. Specifically, similar to Hoff, none of Nicolelis, Dzekunov and Merritt discloses a conducting portion having a second side being disposed to receive a layer of a plurality of objects that are to have a substance disposed therein through electroporation. Accordingly, Nicolelis, Dzekunov and Merritt additionally fail to disclose that when the second side of the conducting portion has a layer of the plurality of objects thereon, the stimulator array is operable to generate spatially variant voltages to the conducting portion to enable the substance to pass through membranes of a spatially variant portion of the plurality of objects via electroporation.

In light of the above, it is clear that Nicolelis, Dzekunov and Merritt fail to disclose a conducting portion, as recited in independent claim 21. Because none of Hoff, Nicolelis, Dzekunov and Merritt discloses a conducting portion, as recited in independent claim 21, a combination of Hoff, Nicolelis, Dzekunov and Merritt additionally fails to disclose that which is recited in

independent claim 21. Therefore claim 21 is patentable over a combination of Hoff, Nicoletis, Dzekunov and Merritt within the meaning of 35 U.S.C. § 103.

Claims 22-27 are dependent upon claim 21, and therefore include all the limitations thereof. For this reason, claims 22-27 are additionally patentable over Hoff, Nicoletis, Dzekunov and Merritt within the meaning of 35 U.S.C. § 103.


In light of the above discussion, it is respectfully submitted that claims 21-27 are patentable over the prior art of record, an indication of which is solicited.

If there are any outstanding issues that can be resolved by telephone interview, the examiner is asked to call the Applicants' attorney Thomas D. Robbins at 202-404-1553.

Kindly charge any additional fees due or credit overpayment of fees to Deposit Account Number 50-0281.

Dated: January 18, 2007

Respectfully submitted,

By 

Thomas D. Robbins

Registration No.: 43,369
US NAVAL RESEARCH LABORATORY
4555 Overlook Ave, SW
Washington, DC 20375
(202) 404-1553
(202) 404-7380 (Fax)
Attorney For Applicants